

WHAT IS CLAIMED

- 1) A device for separating at least one continuous rod of forming material for the manufacture of tobacco products, applicable in particular to a machine for making tobacco products affording a feed path along which the continuous rod is caused to advance, and equipped with at least one cut-off device by which the continuous rod is severed and diverted from the feed path, wherein the function of the separation device is to engage the diverted continuous rod of forming material through the agency of a gripping unit designed to act on the diverted continuous rod by applying forces oriented substantially parallel to a longitudinal dimension of the rod and from opposing directions, so as to generate a tensile stress in the diverted rod that causes it to break by tearing apart and thus divide into a plurality of discrete lengths.
- 2) A device as in claim 1, wherein the gripping unit comprises:
 - a tensioning unit, acting on the diverted continuous rod at a point downstream of the cut-off device, by which a predetermined pulling force is applied to the selfsame rod;
 - a braking unit, acting on the diverted continuous

rod at a point between the cut-off device and the tensioning unit and in such a way that the tensioning unit and the braking unit combine one with another to tear apart a portion of the diverted continuous rod extending between the tensioning and braking units.

- 3) A device as in claim 2, wherein the tensioning unit comprises at least one pair of tension rollers interacting tangentially with opposite sides of the diverted continuous rod, both of which rotating at the same peripheral speed.
- 4) A device as in claim 3, wherein each tension roller is designed to engage in direct contact with the diverted continuous rod by way of a respective contact surface that presents an irregular profile, in such a manner as to engage the diverted continuous rod intermittently at predetermined intervals.
- 5) A device as in claim 4, wherein the contact surface presented by each tension roller comprises:
 - at least one pinch portion presenting a substantially curved profile, such as will engage directly with the diverted continuous rod;
 - at least one release portion extending

circumferentially from the pinch portion through a circular arc of predetermined length, of which the profile is lower than that of the pinch portion so as to afford an unconstrained passage to the diverted continuous rod.

- 6) A device as in claim 5, wherein the tension rollers are disposed symmetrically relative to a longitudinal axis of the diverted continuous rod, with the relative pinch portions extending through substantially identical circular arcs and the release portions extending similarly through identical circular arcs, in such a way that the pinch portions of the rollers engage in contact simultaneously with the diverted continuous rod, whilst the release portions combine simultaneously to determine the duration of the period for which the diverted continuous rod is able to advance unconstrained.
- 7) A device as in claim 3, wherein the braking unit comprises at least one pair of brake rollers offered tangentially to opposite sides of the diverted continuous rod and rotating both at the same peripheral speed, slower than the peripheral speed of the tension rollers.

- 8) A device as in claim 7, wherein the tension rollers and the brake rollers are set in rotation about substantially parallel axes.
- 9) A device as in claim 8, wherein:
 - the axes of rotation of the tension rollers occupy a common plane disposed transversely to the longitudinal axis of the diverted continuous rod;
 - the axes of rotation of the brake rollers occupy a common plane disposed transversely to the longitudinal axis of the diverted continuous rod.
- 10) A device as in claims 7 to 9, further comprising transmission means such as can be coupled to a drive component of the manufacturing machine in order to set the brake rollers and the tension rollers in rotation.
- 11) A device as in claim 10, wherein the transmission means comprise a first transmission component interposed functionally between one brake roller of the braking unit and the drive component of the manufacturing machine.
- 12) A device as in claim 11, wherein the first transmission component comprises:
 - a first wheel associated with the drive

- component of the manufacturing machine;
- a second wheel associated with a driving brake roller of the braking unit;
 - at least one flexible transmission element looped around the first and second wheels.
- 13) A device as in claim 12, wherein the transmission means comprise a second transmission component associated functionally with the brake rollers and serving to transmit rotary motion from the driving brake roller to the other brake roller of the braking unit, so that this same roller is driven in rotation by the driving brake roller.
- 14) A device as in claim 13, wherein the second transmission component comprises:
- a first rotary transmission element associated with the driving brake roller and projecting radially beyond the circumference of the selfsame roller without affecting the movement of the advancing diverted continuous rod;
 - a second rotary transmission element associated with the driven brake roller and projecting radially beyond the circumference of the selfsame roller, operating in conjunction with the first rotary transmission element and in such a way that the

driven brake roller is set in rotation at the same peripheral speed as the driving brake roller.

- 15) A device as in claim 13 or 14, wherein transmission means further comprise a third transmission component interposed functionally between the braking unit and the tensioning unit in such a way as to transmit rotary motion to at least one tension roller of the tensioning unit.
- 16) A device as in claim 15, wherein the third transmission component is interposed functionally between the driven brake roller and a driving tension roller of the tensioning unit of which the axis of rotation lies in the same plane as that occupied by the axis of the driven brake roller.
- 17) A device as in claim 16, wherein the third transmission component comprises:
 - a first wheel associated with the driven brake roller;
 - a second wheel associated with the driving tension roller and of diameter smaller than the diameter of the first wheel, in such a way that the driving tension roller can be set in rotation at a peripheral speed higher than the peripheral speed of the driven brake roller;

- at least one flexible transmission element looped around the first and second wheels.
- 18) A device as in claim 16 or 17, wherein transmission means further comprise a fourth transmission component associated functionally with the tension rollers and serving to transmit rotary motion from the driving tension roller to the other tension roller of the tensioning unit, so that this same roller is driven in rotation by the driving tension roller.
- 19) A device as in claim 18, wherein the fourth transmission component comprises:
- a first rotary transmission element associated with the driving tension roller and projecting radially beyond the circumference of the selfsame roller without affecting the movement of the advancing diverted continuous rod;
 - a second rotary transmission element associated with the driven tension roller and projecting radially beyond the circumference of the selfsame roller, operating in conjunction with the first rotary transmission element and in such a way that the driven tension roller is set in rotation at the same peripheral speed as the driving tension roller.

- 20) A device as in claims 1 to 19, wherein the separating action of the device is generated without the use of cutting elements.
- 21) A machine for making tobacco products, establishing a feed path along which to advance a continuous rod of forming material used in fashioning the products, comprising:
- a forming unit by which the continuous rod of forming material is generated;
 - a cutter device operating downstream of the forming unit generating the continuous rod, by which the selfsame rod is divided into discrete portions each ultimately constituting a single tobacco product;
 - a cut-off device interposed functionally between the forming unit and the cutter device, capable of movement between a position of disengagement, in which the continuous rod of forming material is free to advance as normal along the feed path, and a position of interference in which the continuous rod is cut through and diverted from the feed path by the device;
 - a separation device as in preceding claims, by means of which to divide the advancing continuous rod into discrete lengths.

- 22) A method of separating at least one continuous rod of forming material for making tobacco products into a plurality of reclaimable lengths, wherein the separation of the continuous rod of forming material involves the step of applying at least two forces oriented parallel to the longitudinal axis of the continuous rod and from opposing directions.
- 23) A method as in claim 22, wherein the at least two forces oriented parallel to the longitudinal axis of the continuous rod and generated from opposing directions are applied at a strength such as to place the continuous rod under a tensile stress that will cause it to break by tearing apart.
- 24) A method as in claims 22 and 23, wherein the step of separating the continuous rod is effected without cutting operations.